Water Conditions Summary

April 14, 2011
Governing Board Meeting

Susan Sylvester, Department Director
Operations Control & Hydro Data Management Department
South Florida Water Management District

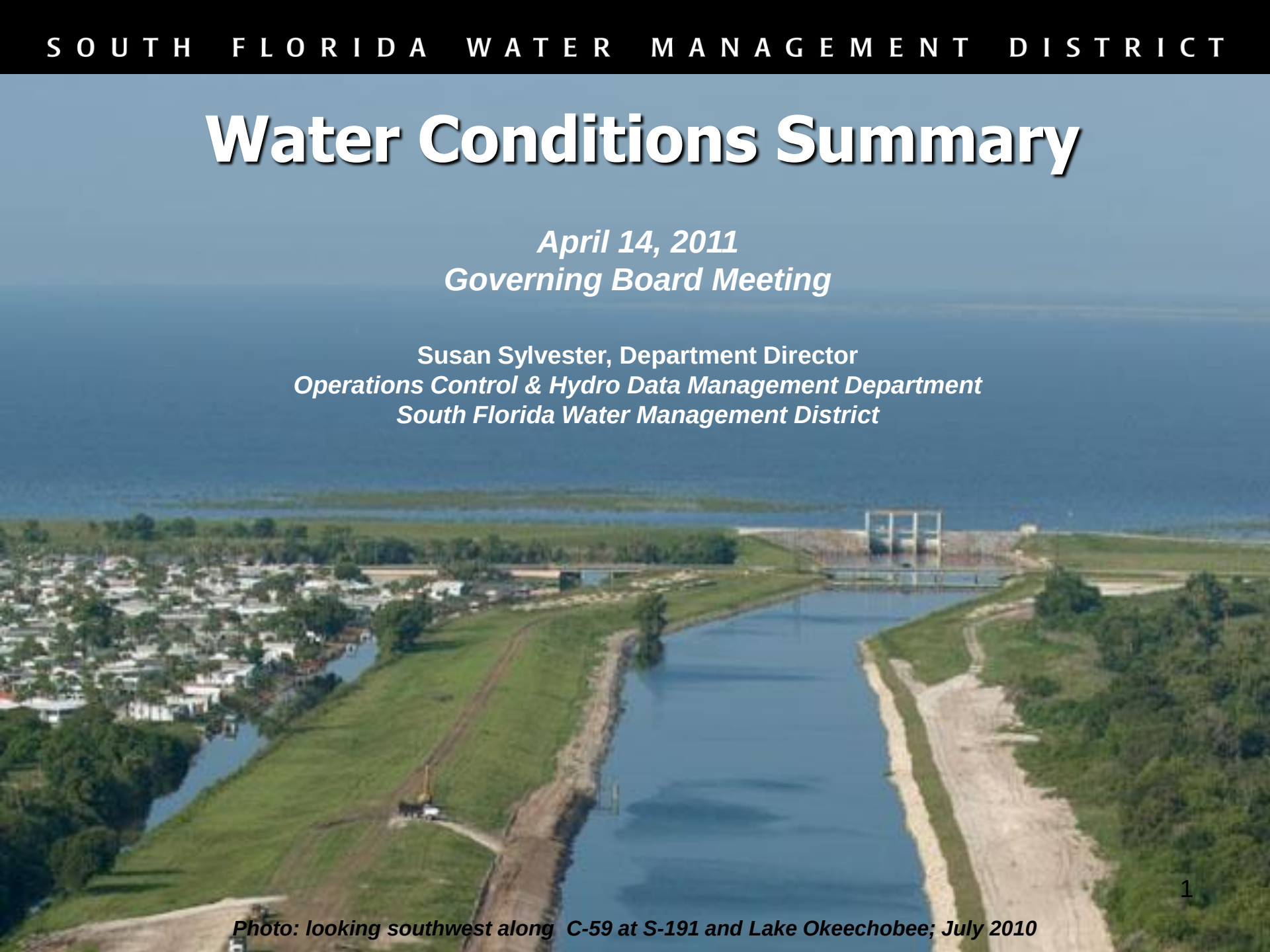
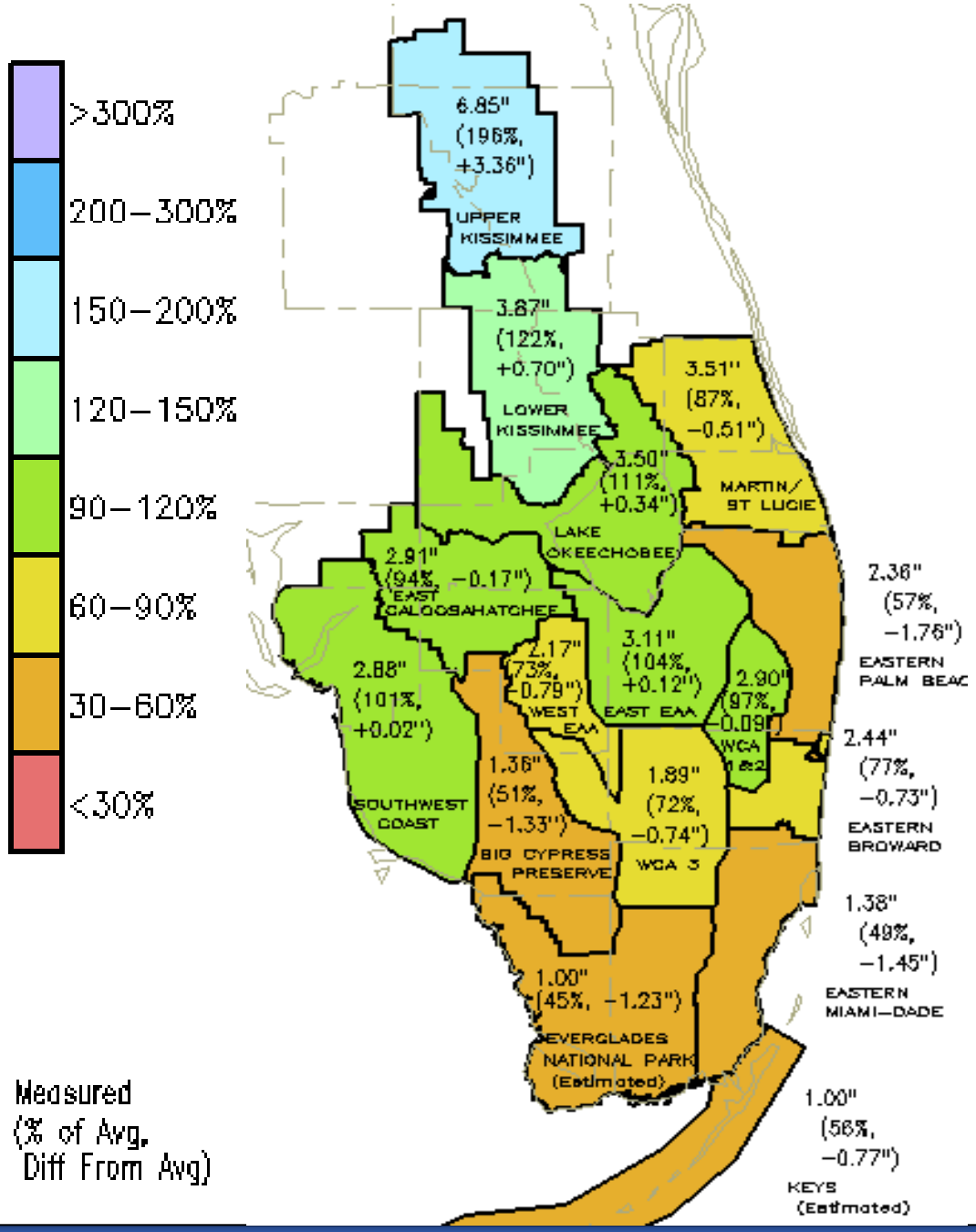


Photo: looking southwest along C-59 at S-191 and Lake Okeechobee; July 2010

SFWMD 2011
March Rain
Mar 2 – Apr 1



DISTRICT-WIDE: 3.13” (100% of Avg, or -0.01”)

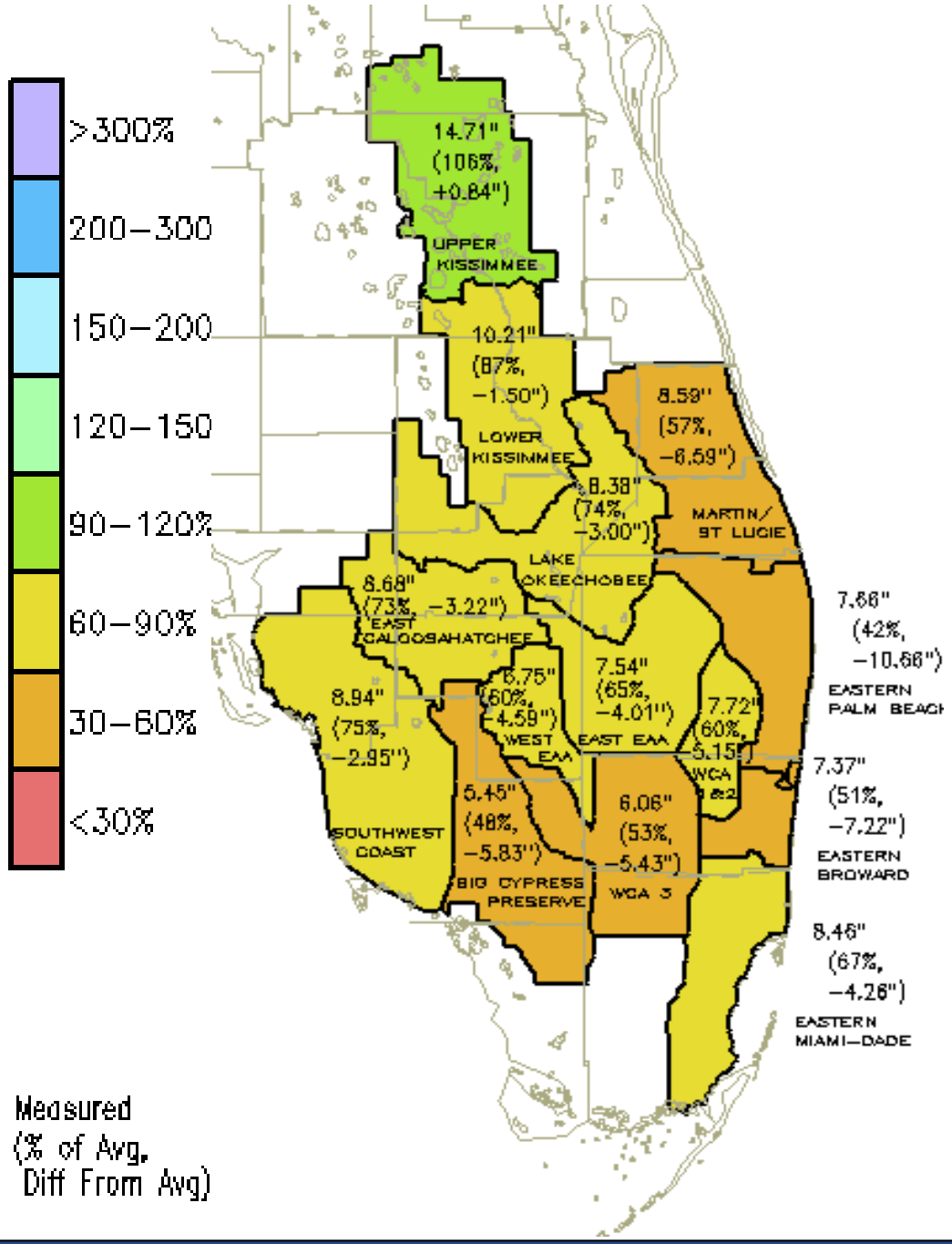
- **Basins north and west of LOK received normal or above normal rainfall**
- **LOK, East EAA and WCAs 1 & 2 also received normal rainfall over the month**
- **Basins along the east coast, WCA3, West EAA, and Big Cypress Preserve receive less than average**

SFWMD 2010-11

Dry Season* Rainfall

Nov 2 – Apr 13

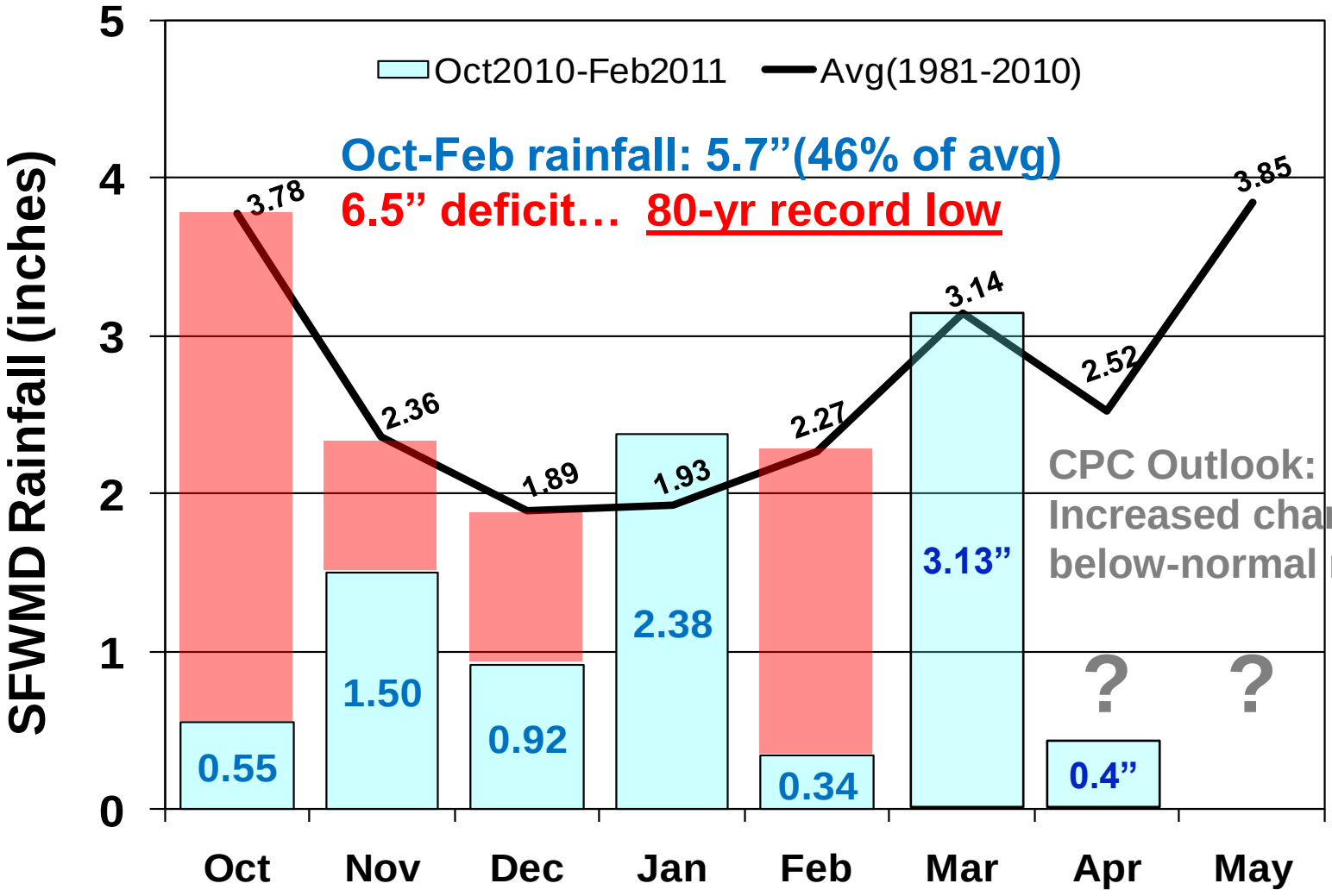
DISTRICT-WIDE: 8.66” (69% of Avg, or -3.94”)



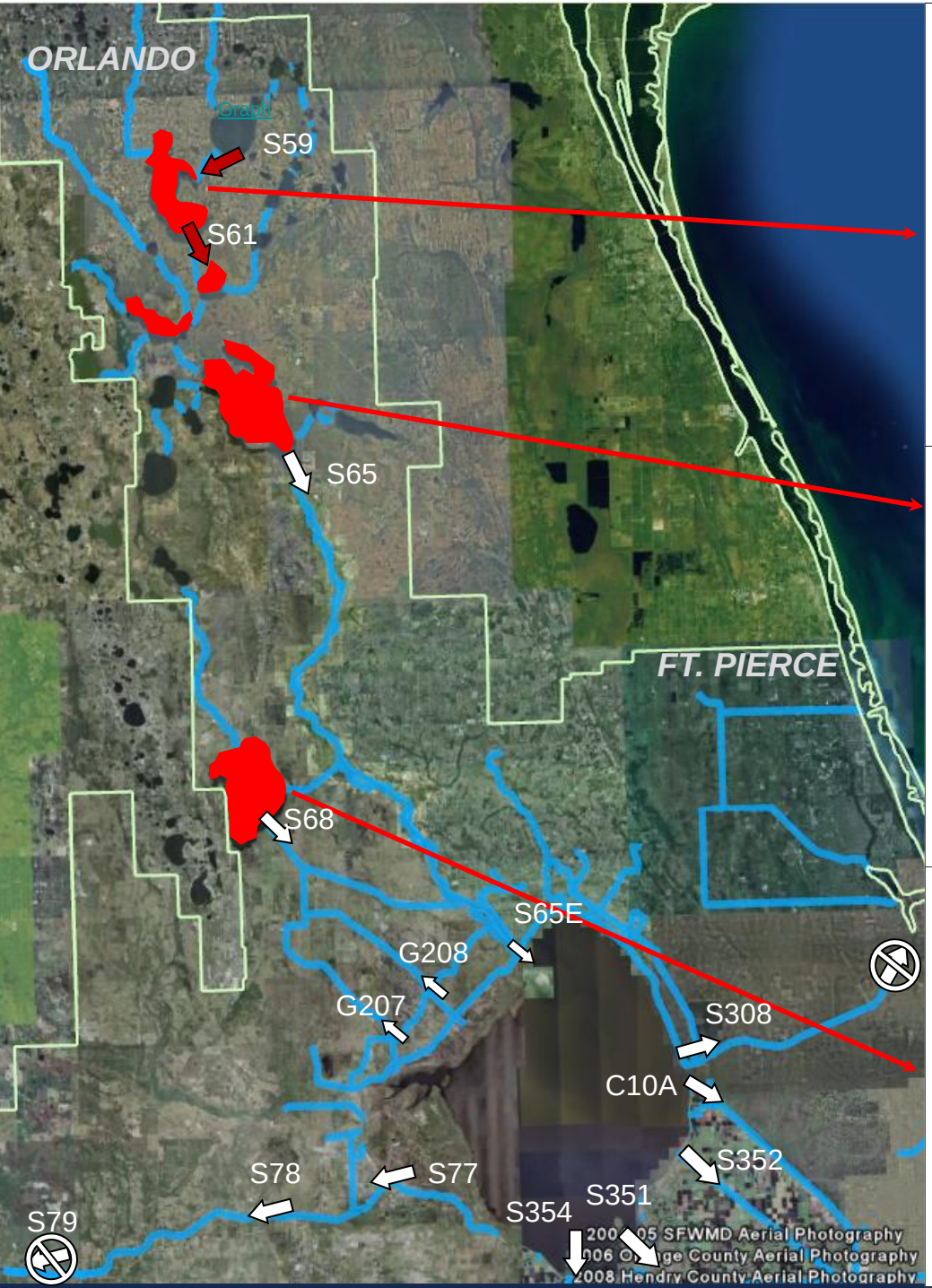
- **Typical influence from La Nina during Nov-Mar is about a 4-inch deficit**
- **Above-average rain in January**
- **The dry season started early with a record rainfall deficit in October**
- **October-Feb rainfall was less than half the average. A record low since recordkeeping began in 1932**

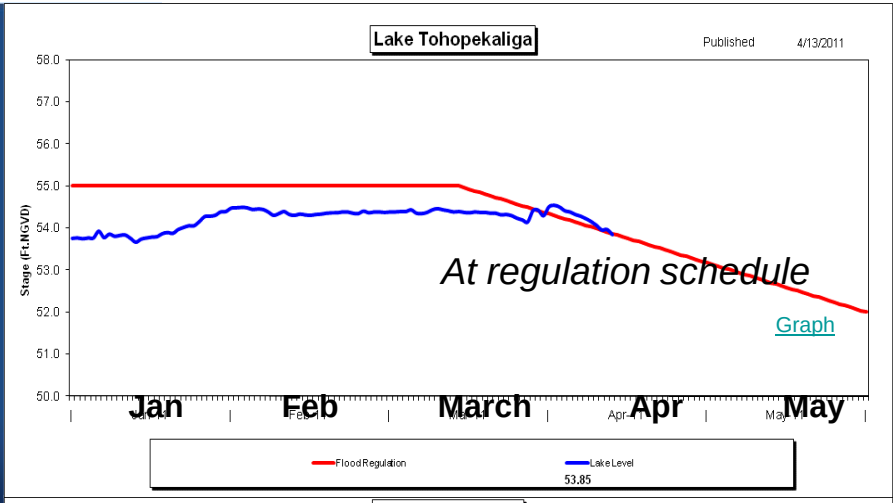
** 2010-11 Dry season started in October*

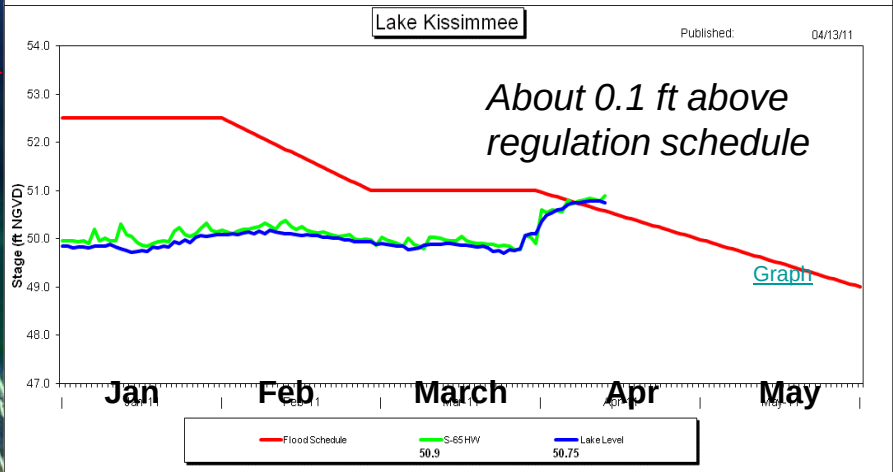
SFWMD Rainfall Distribution Comparison (October-May)

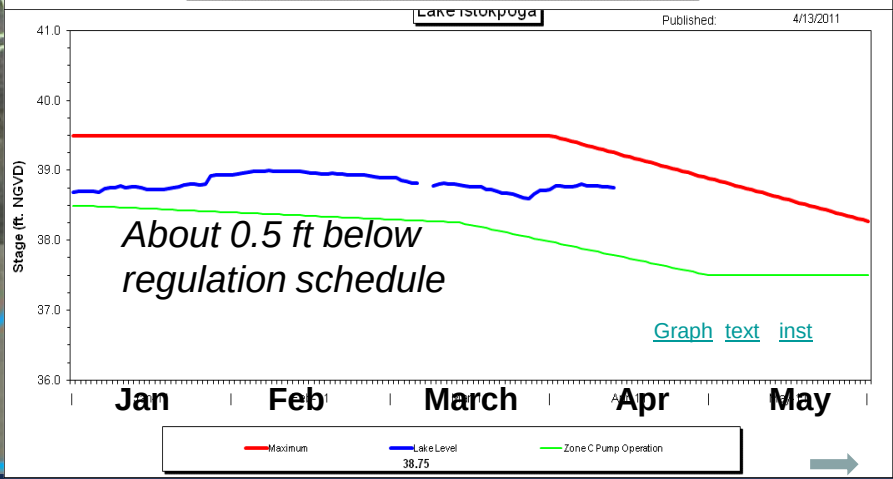


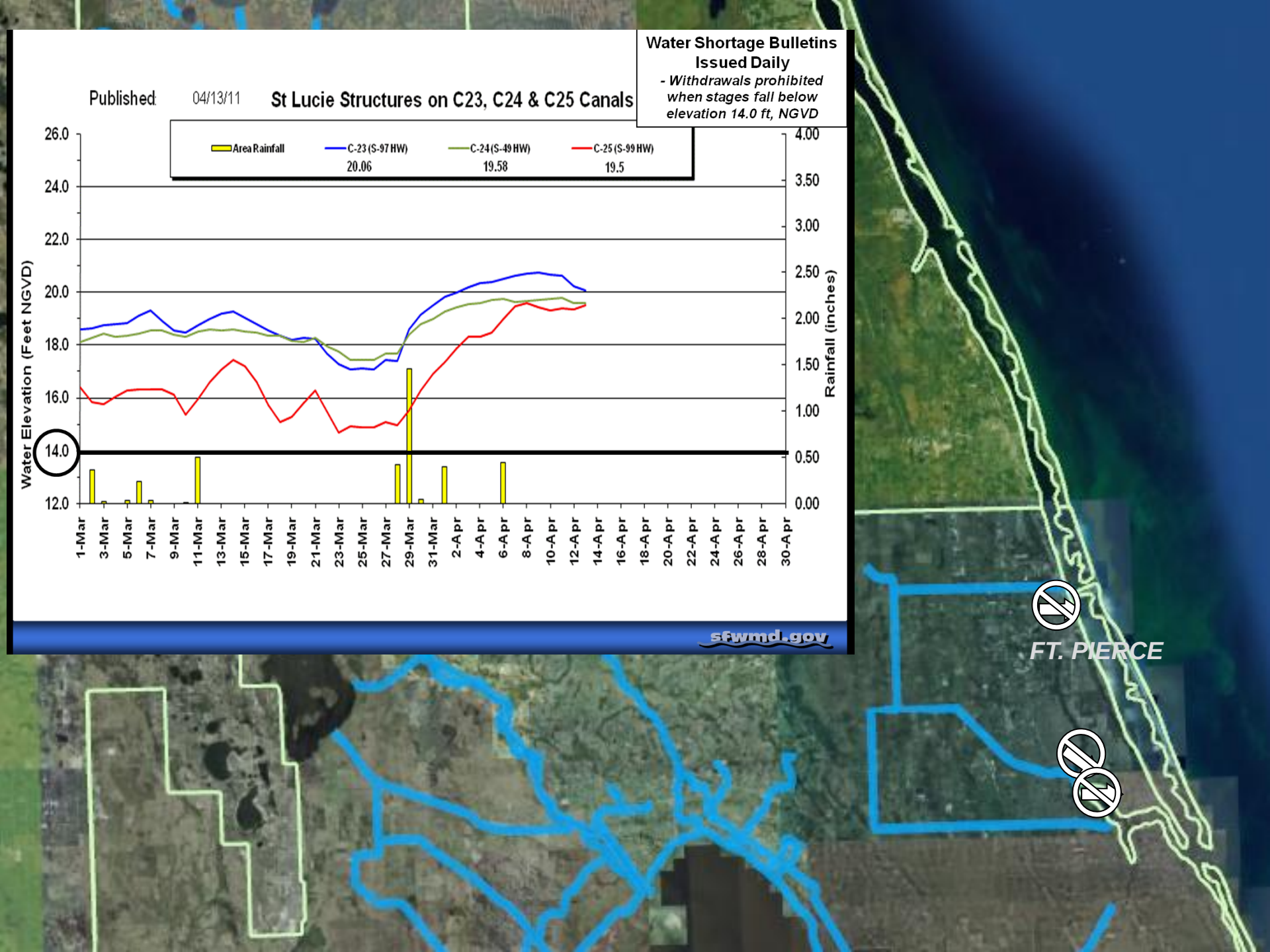
** April total through the 11th*


ORLANDO
Graph
S59
S61
S65
FT. PIERCE
S68
S65E
G208
G207
S308
C10A
S352
S78
S77
S354
S351
S79
2005 SFWMD Aerial Photography
2006 Orange County Aerial Photography
2008 Hendry County Aerial Photography

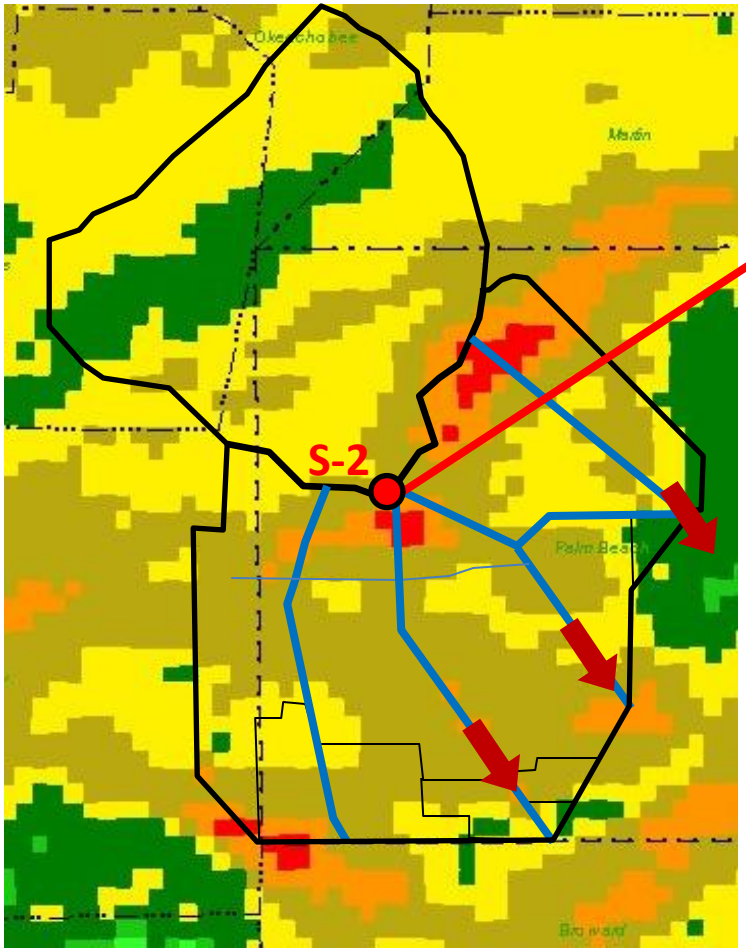

Lake Tohopekaliga
Published 4/13/2011
Stage (Ft.NGVD)
58.0
57.0
56.0
55.0
54.0
53.0
52.0
51.0
50.0
Jan
Feb
March
Apr
May
At regulation schedule
Graph
Flood Regulation
Lake Level
53.85

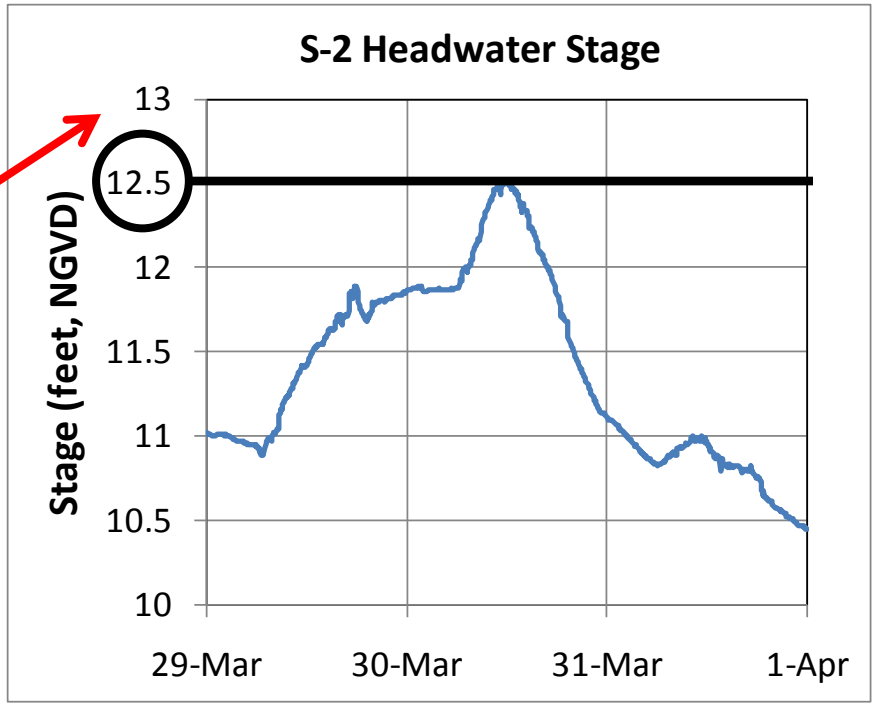

Lake Kissimmee
Published: 04/13/11
Stage (ft NGVD)
54.0
53.0
52.0
51.0
50.0
49.0
48.0
47.0
Jan
Feb
March
Apr
May
About 0.1 ft above regulation schedule
Graph
Flood Schedule
S-65 HW
50.9
Lake Level
50.75


Lake Istokpoga
Published: 4/13/2011
Stage (ft. NGVD)
41.0
40.0
39.0
38.0
37.0
36.0
Jan
Feb
March
Apr
May
About 0.5 ft below regulation schedule
Graph
text
inst
Maximum
Lake Level
38.75
Zone C Pump Operation


Water Shortage Bulletins
Issued Daily
- Withdrawals prohibited when stages fall below elevation 14.0 ft, NGVD
Published: 04/13/11
St Lucie Structures on C23, C24 & C25 Canals
Area Rainfall
C-23 (S-97 HW)
20.06
C-24 (S-49 HW)
19.58
C-25 (S-99 HW)
19.5
Water Elevation (Feet NGVD)
Rainfall (inches)
26.0
24.0
22.0
20.0
18.0
16.0
14.0
12.0
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
1-Mar
3-Mar
5-Mar
7-Mar
9-Mar
11-Mar
13-Mar
15-Mar
17-Mar
19-Mar
21-Mar
23-Mar
25-Mar
27-Mar
29-Mar
31-Mar
2-Apr
4-Apr
6-Apr
8-Apr
10-Apr
12-Apr
14-Apr
16-Apr
18-Apr
20-Apr
22-Apr
24-Apr
26-Apr
28-Apr
30-Apr
sfwmd.gov
FT. PIERCE

March 28-29 Rain Event

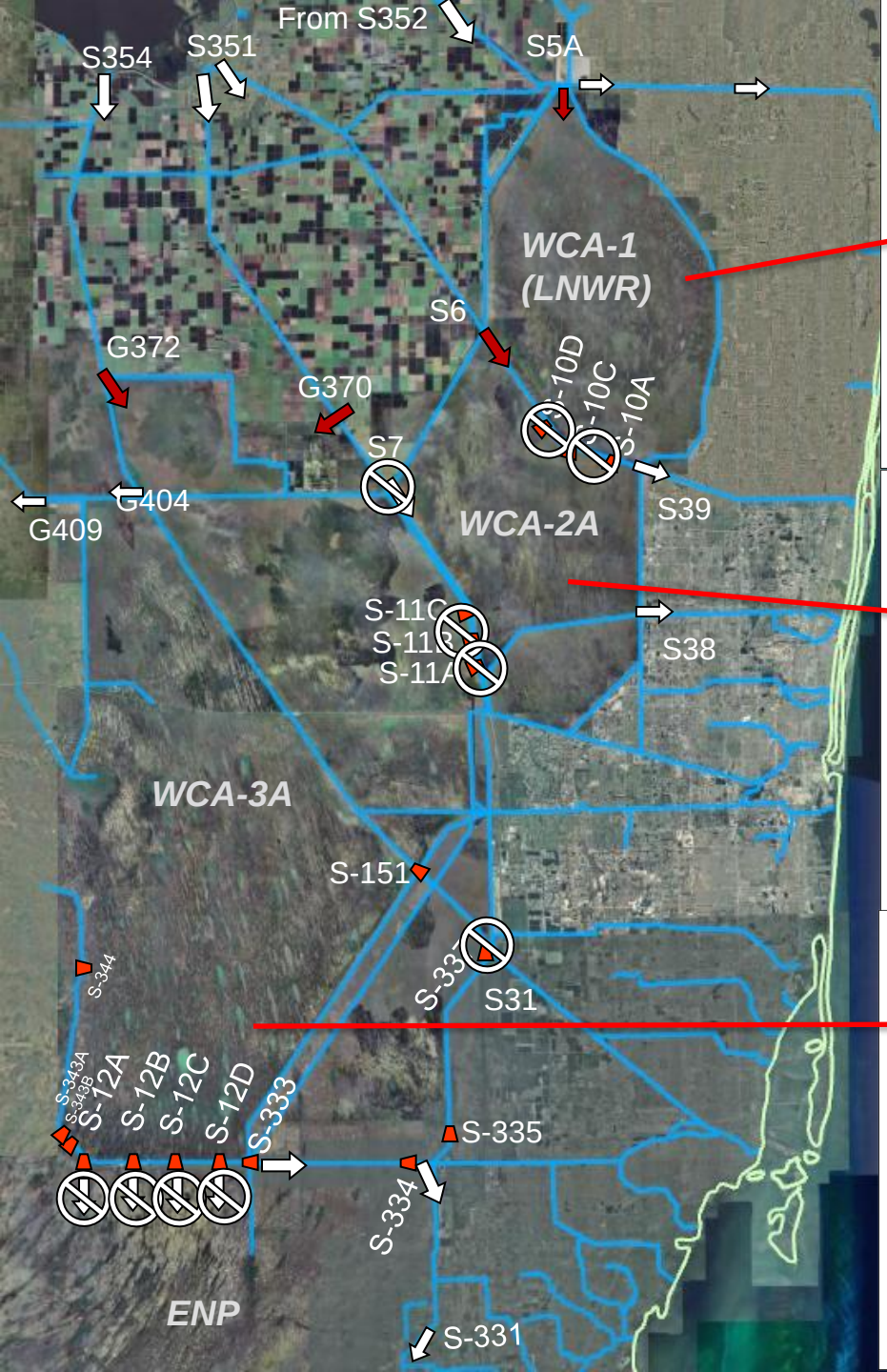


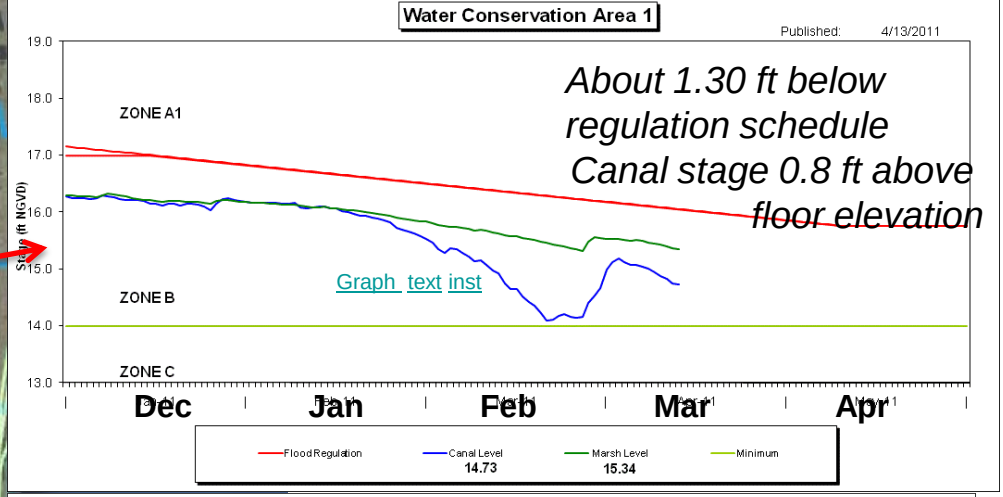


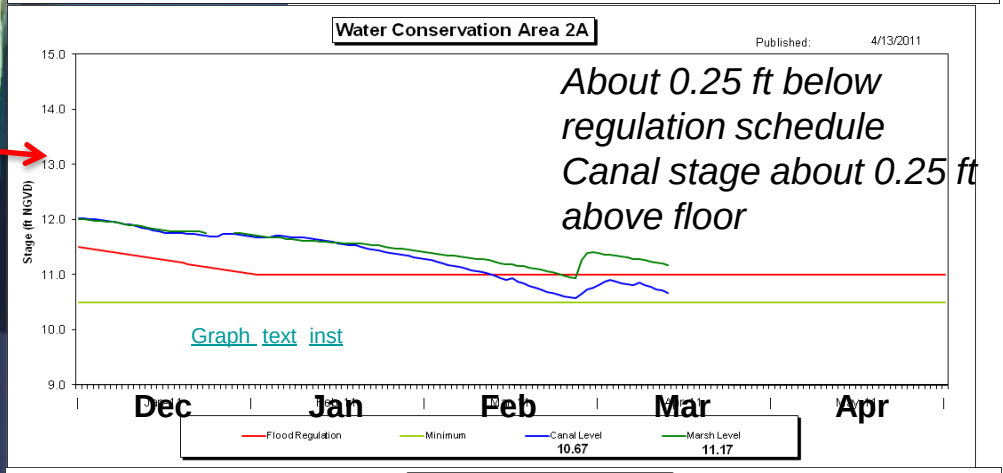
EAA AVG = 2.4”
Highest 2-day rainfall at northern gages:
SBAY = 4.4”
CANAL PT = 5.7”
S352 = 5.0”

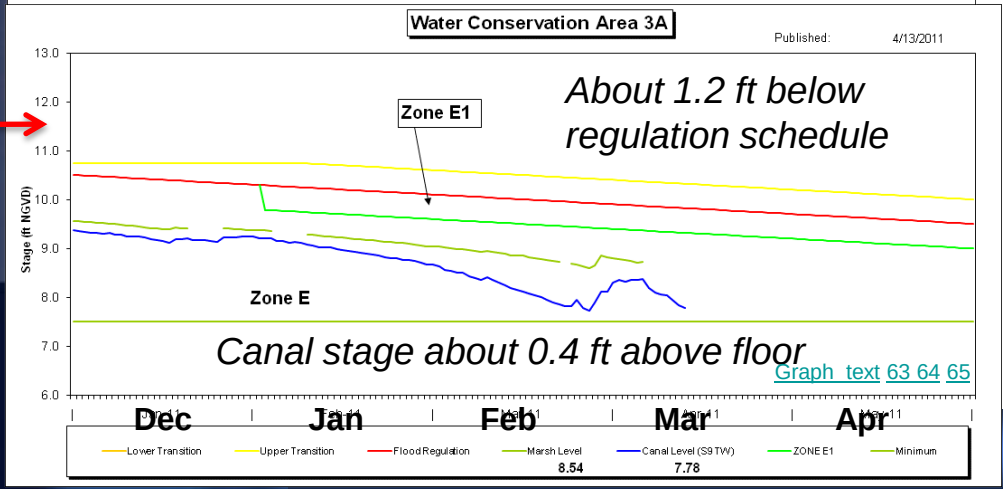
- Runoff from rainfall increased S-2 headwater stage to elevation 12.5 ft, NGVD, nearly triggering S-2 pumping.

- Maximum pumping southward kept the stage from rising further and prevented the need for pumping S-2.

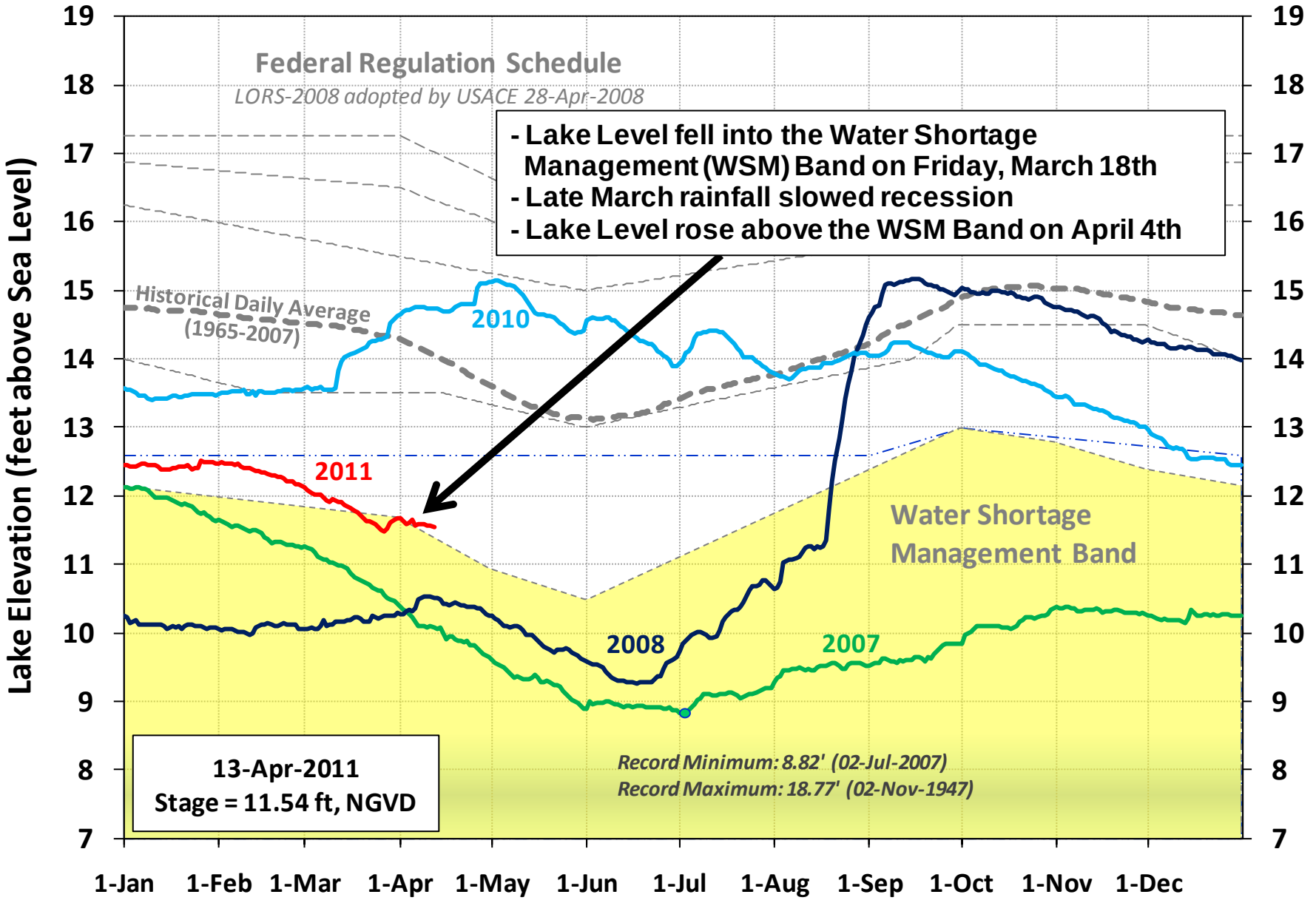

From S352
S354
S351
S5A
WCA-1
(LNWR)
S6
G372
G370
S-10D
S-10C
S-10A
S7
G404
G409
S39
WCA-2A
S-11C
S-11
S-11A
S38
WCA-3A
S-151
S-344
S-33
S31
S-343A
S-343B
S-12A
S-12B
S-12C
S-12D
S-333
S-335
S-334
ENP
S-331


Water Conservation Area 1
Published: 4/13/2011
ZONE A1
ZONE B
ZONE C
Stage (ft NGVD)
19.0
18.0
17.0
16.0
15.0
14.0
13.0
Dec
Jan
Feb
Mar
Apr
Flood Regulation
Canal Level
14.73
Marsh Level
15.34
Minimum
About 1.30 ft below regulation schedule
Canal stage 0.8 ft above floor elevation
Graph text inst


Water Conservation Area 2A
Published: 4/13/2011
Stage (ft NGVD)
15.0
14.0
13.0
12.0
11.0
10.0
9.0
Dec
Jan
Feb
Mar
Apr
Flood Regulation
Minimum
Canal Level
10.67
Marsh Level
11.17
About 0.25 ft below regulation schedule
Canal stage about 0.25 ft above floor
Graph text inst


Water Conservation Area 3A
Published: 4/13/2011
Zone E1
Zone E
Stage (ft NGVD)
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
Dec
Jan
Feb
Mar
Apr
Lower Transition
Upper Transition
Flood Regulation
Marsh Level
8.54
Canal Level (S9TW)
7.78
ZONE E1
Minimum
About 1.2 ft below regulation schedule
Canal stage about 0.4 ft above floor
Graph text 63 64 65

Lake Okeechobee Water Level Comparison



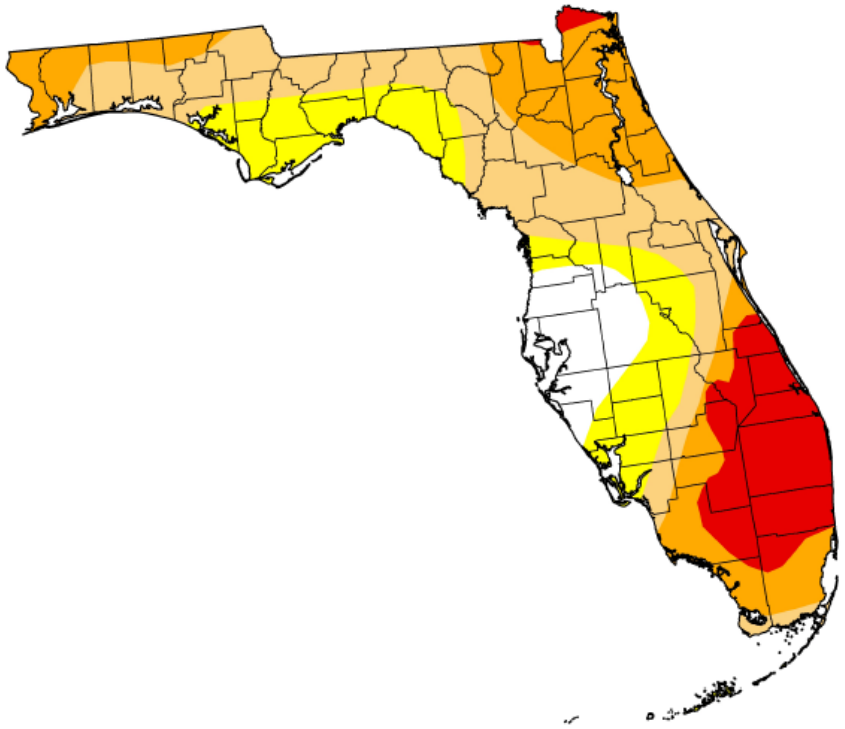
U.S. Drought Monitor

April 5, 2011
Valid 7 a.m. EST

Florida

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	8.84	91.16	71.42	40.13	15.32	0.00
Last Week (03/29/2011 map)	0.04	99.96	82.72	54.43	20.42	0.00
3 Months Ago (01/04/2011 map)	0.18	99.82	87.19	54.19	21.61	0.00
Start of Calendar Year (12/28/2010 map)	0.18	99.82	86.04	50.84	20.21	0.00
Start of Water Year (09/28/2010 map)	54.97	45.03	18.02	4.22	0.00	0.00
One Year Ago (03/30/2010 map)	100.00	0.00	0.00	0.00	0.00	0.00



Intensity:

- *D0 Abnormally Dry*
- *D1 Drought - Moderate*
- *D2 Drought - Severe*
- *D3 Drought - Extreme*
- *D4 Drought - Exceptional*

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

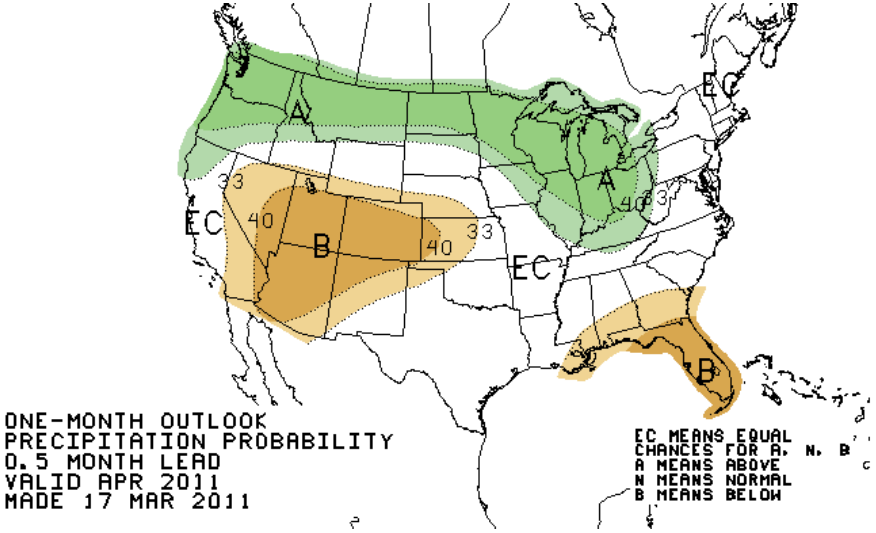
http://drought.unl.edu/dm

Released Thursday, April 7, 2011
National Drought Mitigation Center,

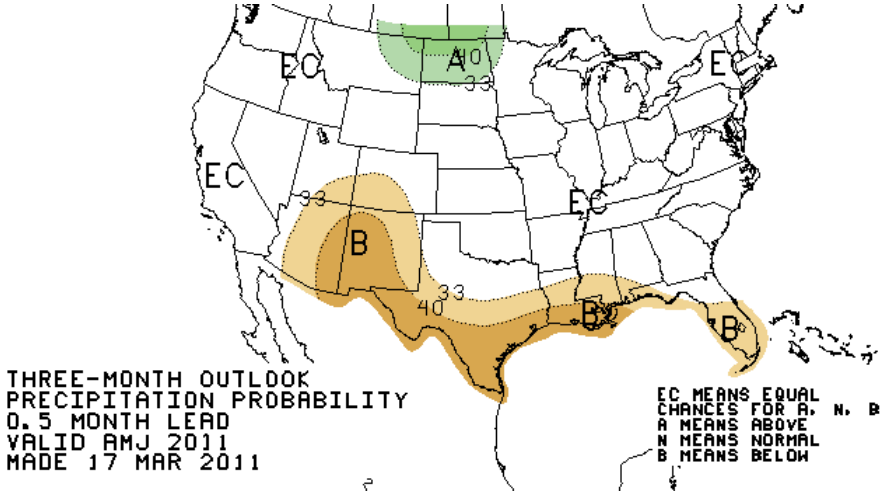
U. S. Seasonal Precipitation Outlook

National Climate Prediction Center (CPC)

April 2011



April-May-June 2011



La Niña conditions are expected to continue into the 2010-2011 dry season

The current precipitation outlook for central and southern Florida is:

- increased chance of below-normal (B) rainfall for April.
- increased chance of below-normal (B) rainfall for April-June 2011
- increased chance of below-normal (B) rainfall for the entire 2010-11 dry season

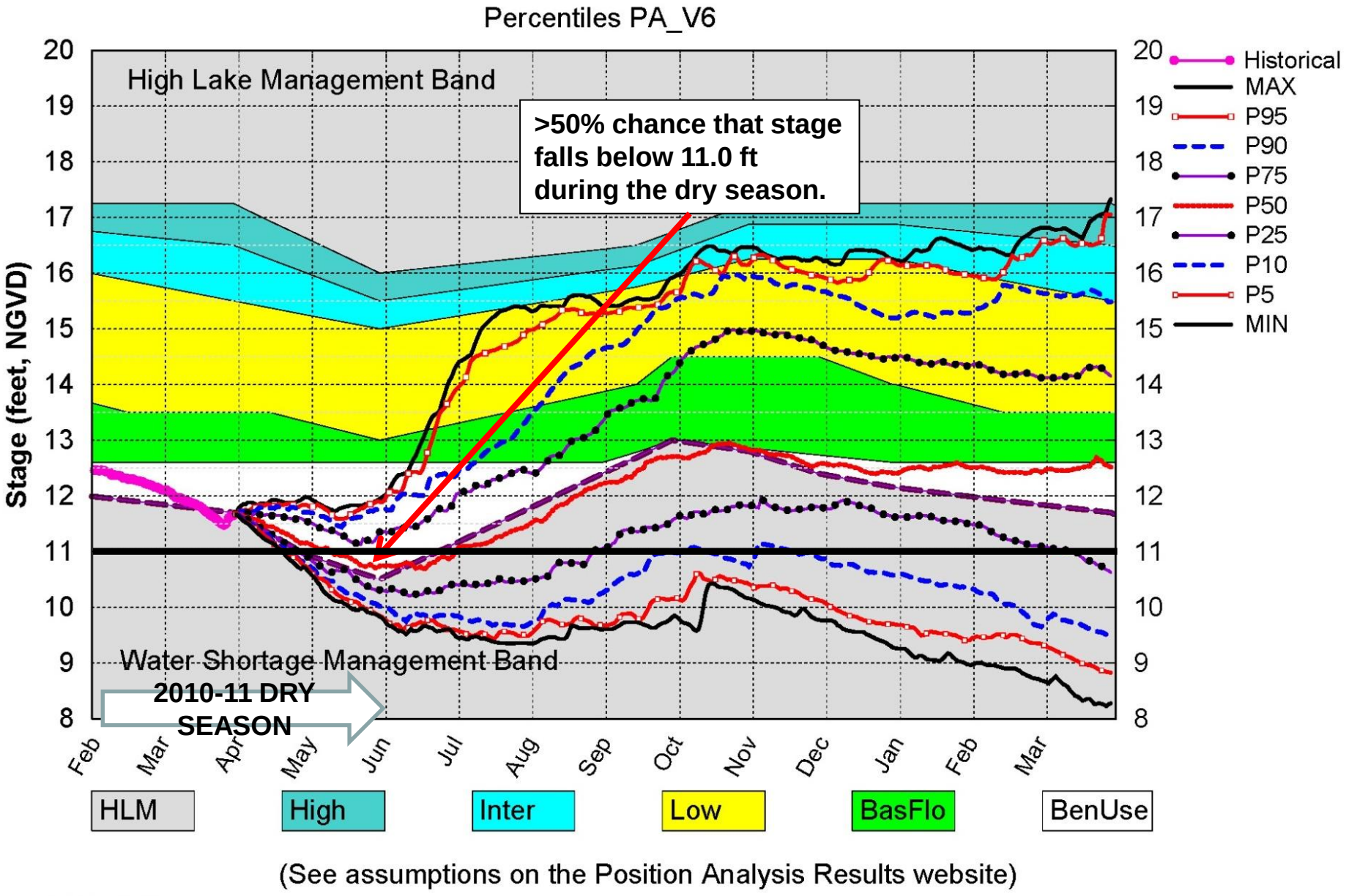
Lake Okeechobee Stage Forecast

- **Future Lake stage depends on future rainfall**
- **Projections provided monthly by SFWMD Hydrologic and Environmental Systems Modeling (HESM) Department**

  Don Ketprakong, Paul Trimble, Danielle Morancy, Luis Cadavid, Jayantha Obeysekera

- **Position Analysis**
  - **Each year starts with current hydrologic conditions**
  - **41 1-yr simulations of system response to historical rainfall conditions**
  - **Statistical summaries used to display projections**

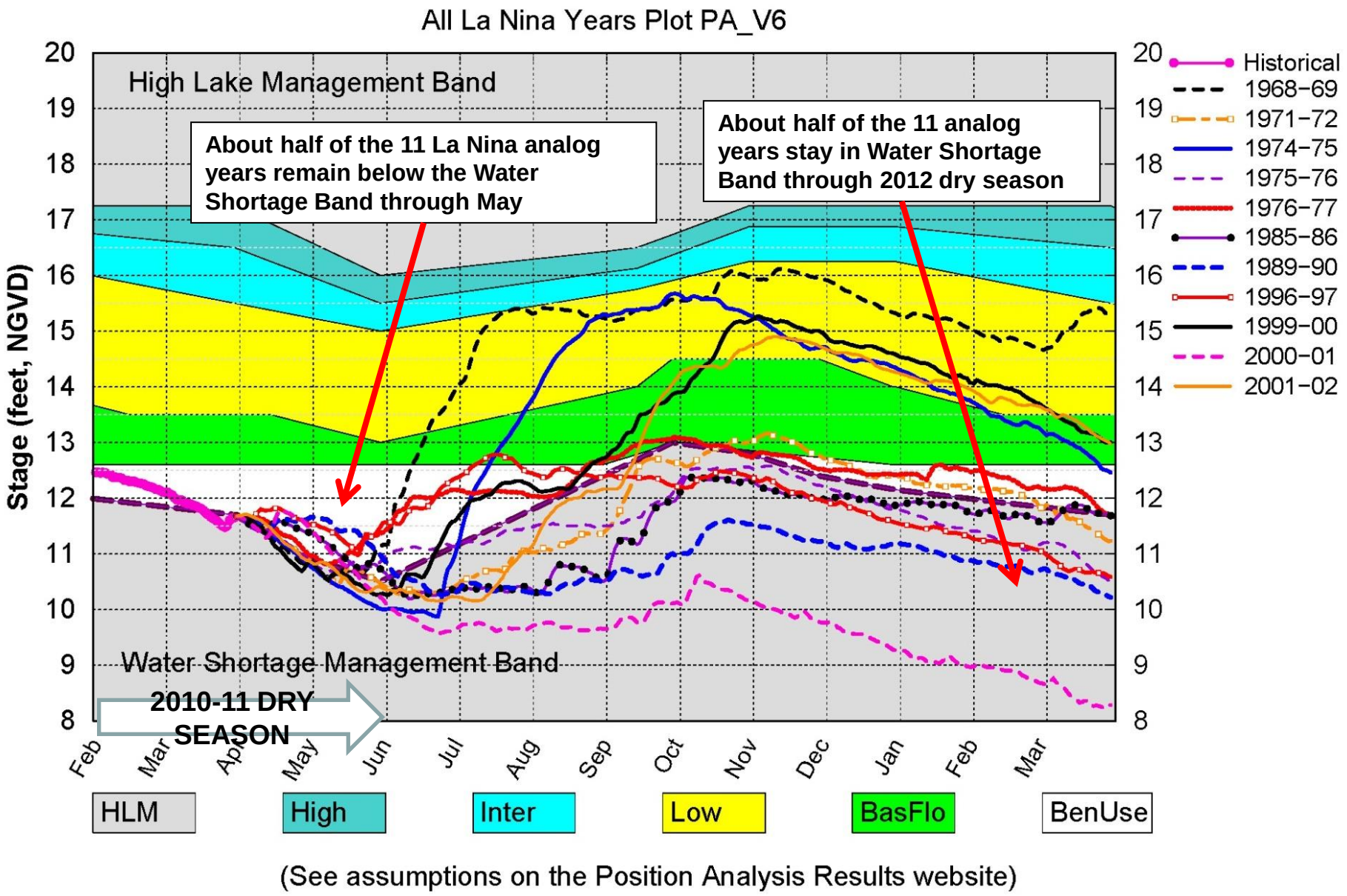
Lake Okeechobee SFWMM April 2011 Position Analysis



(See assumptions on the Position Analysis Results website)

Wed Apr 6 14:14:46 2011

Lake Okeechobee SFWMM April 2011 Position Analysis



(See assumptions on the Position Analysis Results website)

Wed Apr 6 14:15:15 2011

Ft Lauderdale Fld Station, spreading road base fill material on the L-36

Water Conditions Summary

Lake Okeechobee - Lake Okeechobee is at 11.57 ft NGVD (-0.02 ft from last week)
3.17 ft below last year level; 2.53 ft below Period of records Average
LOK level dropped below water shortage management band on Friday March 18, and rose above it on April 04

Last 7-days Rainfall = 0.396”

As with October (12% of normal) and November (56% of normal) , December was also very dry with a rainfall total of 0.92” (49 % of normal rainfall) - Through Jan. 31, January rainfall is above normal, with a total of 2.38 inches (123% of normal, +0.45 inches). Feb rainfall is 0.34” (15% normal, - 1.93”). March rainfall is 2.72 inches (90%, -0.32”)

Lake Kissimmee outflows are about 1300 cfs.

water supply deliveries to the EAA at S351, S352 and S354 resumed this past week

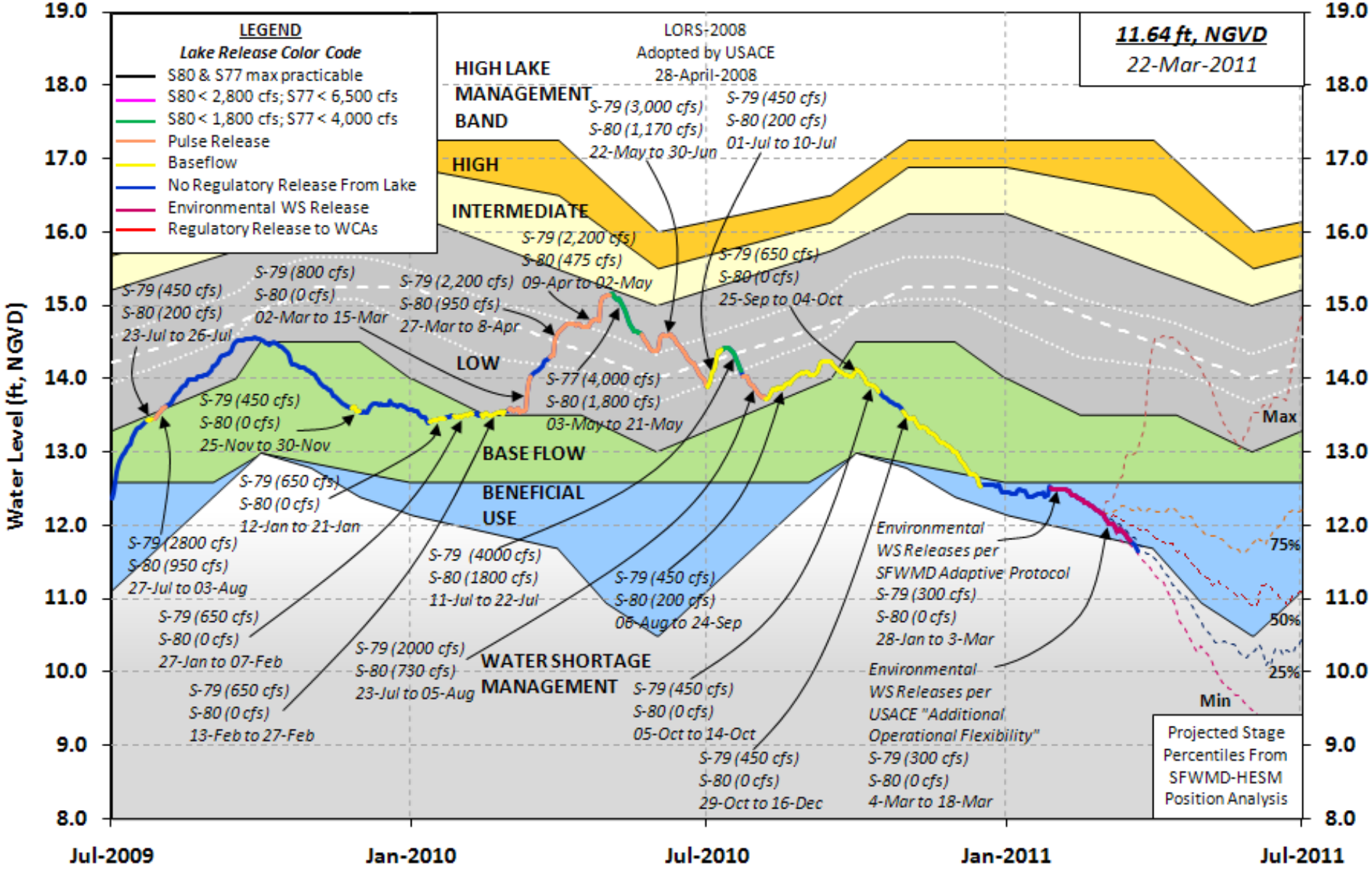
Limited releases to the East Coast from WCA1 (S39) and WCA2 (S38); Releases from WCA3 to NESRS/SDCS (S333 at about 265 cfs – and releases to SDCS from WCA3 at S334 (about 255 cfs)

S10s and S11s, S12A, S12B are closed per IOP- and S12C and D (total S12 flow 0 cfs) closed due to lack of rain.

Backup Slides

Photo: February 2011 Kissimmee River (Photography by Brent Anderson Branders@SFWMD.gov)

Lake Okeechobee Water Level History and Projected Stages



http://my.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/lokstg.pdf

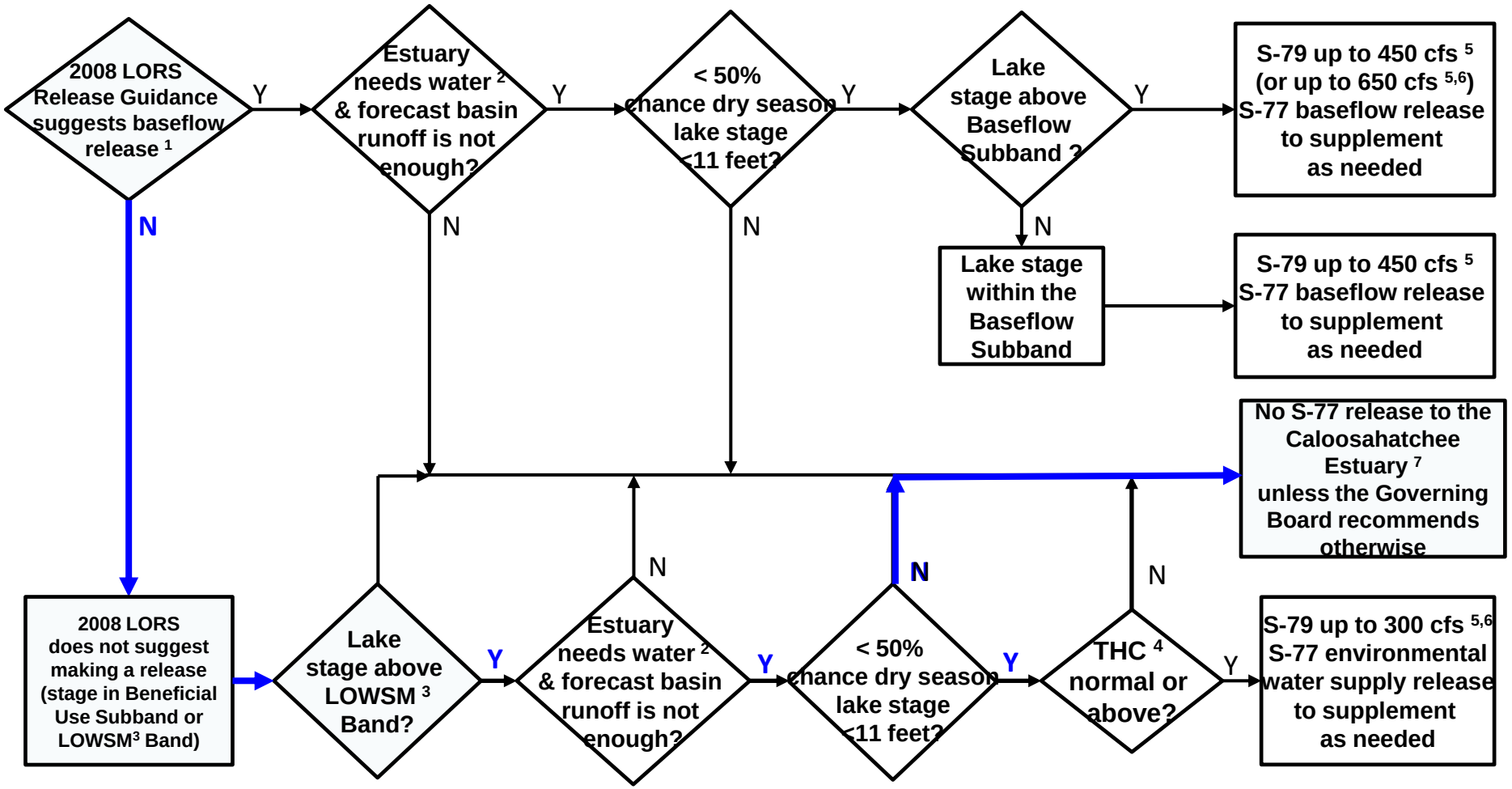
Lake Okeechobee Operations

- **USACE's Lake Okeechobee Regulation Schedule (2008 LORS)**
  - **March 9th Stage is 11.94 ft, NGVD**
  - **within the Beneficial Use Subband**
    - **about 0.15 ft above the Water Shortage Management Band**
- **Federal Water Control Plan refers to SFWMD's Adaptive Protocols or other SFWMD Authorities for environmental releases in the Beneficial Use Subband**

Lake Okeechobee Operations (cont'd)

- **SFWMD's Lake O Adaptive Protocol (2010)**
  - **Jan 28 – Feb 25: 5 consecutive weeks of releases**
    - **AP Release guidance suggested up to 300 cfs release to the Caloosahatchee Estuary via S-79, with S-77 environmental water supply release to supplement as needed**
  - **Starting Mar 4: AP Guidance suggests no releases**
    - **Tributary Hydrologic Condition is in the "dry" class**
    - **51% Chance that Lake stage falls below 11.0' before June 1st**
    - **SFWMD staff recommends no releases**
- **USACE initiated 300 cfs environmental water supply release Mar 4 and intends to continue releases until stage falls into Water Shortage Management Band**
- **SFWMD staff recommends no releases per Adaptive Protocol Release Guidance**

Flowchart to Guide Recommendations for Lake Okeechobee Releases to the Caloosahatchee Estuary for 2008 LORS Baseflow & for Environmental Water Supply



[1]The 2008 LORS Release Guidance (Part D) can suggest baseflow releases in the Intermediate, Low, or Baseflow Subbands.

[2]Estuary "needs" water when the 30-day moving average salinity at I-75 bridge is projected to exceed 5 practical salinity units (psu) within 2 weeks.

[3]LOWSM = Lake Okeechobee Water Shortage Management.

[4]Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.

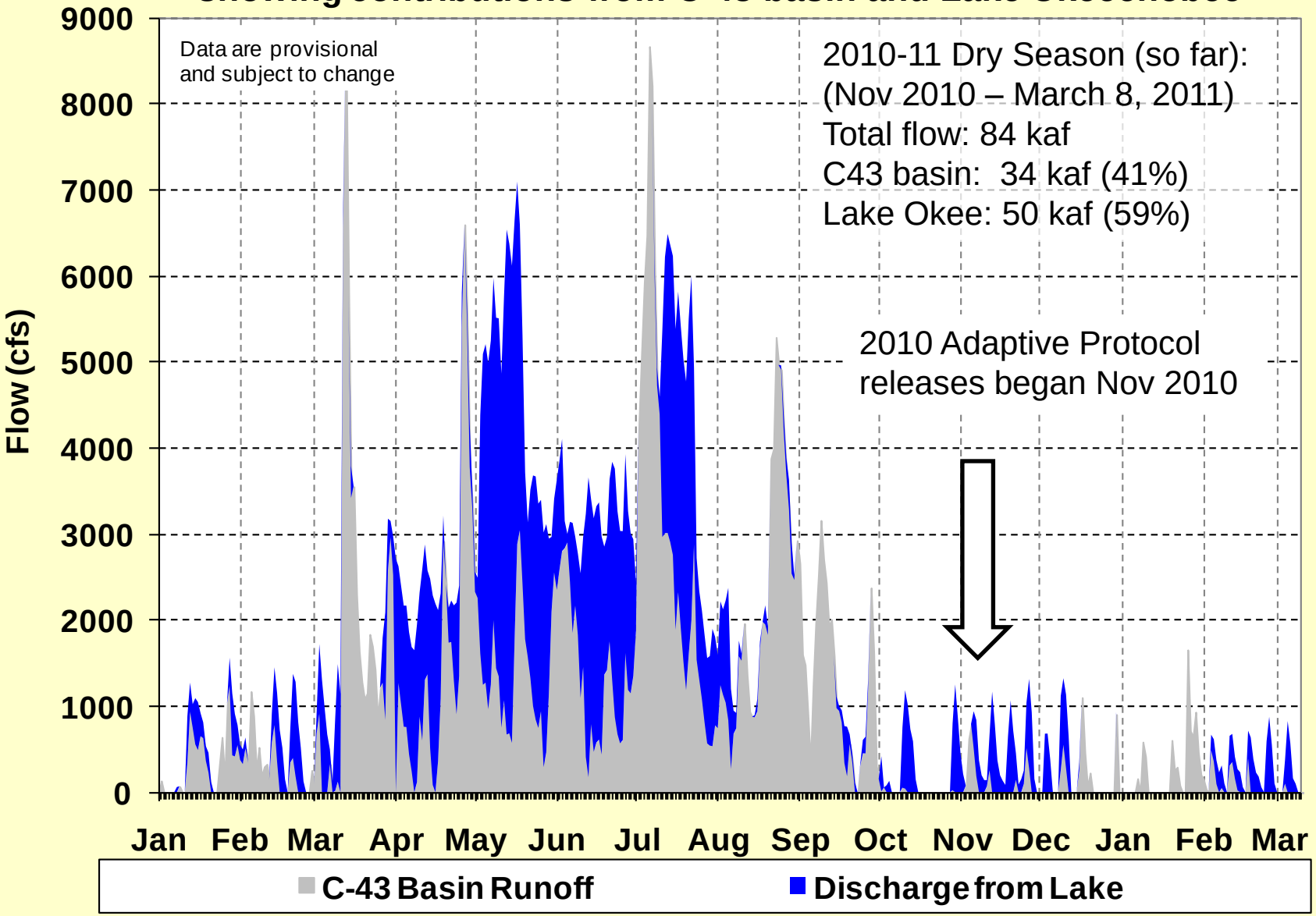
[5]Can release less than the "up to" limit if lower release is sufficient to reach or sustain desired estuary salinity; cfs = cubic feet per second.

[6]After reviewing conditions in Water Conservation Areas (WCAs), Stormwater Treatment Areas (STAs), ENP, St. Lucie Estuary and Lake Okeechobee.

[7]Should this condition be reached, the Governing Board will be briefed at their next regularly scheduled meeting as part of the State of the Water Resources agenda item.

Total Flow From W.P. Franklin Lock and Dam (S-79)

showing contributions from C-43 basin and Lake Okeechobee



Total Flow From St. Lucie Lock and Dam (S-80)

showing contributions from C-44 basin and Lake Okeechobee